Annual Report on Public Safety Wireless Voice and Data Communications Interoperability in the Commonwealth of Kentucky 2011

Submitted by
Deputy Commissioner and KWIEC Chairperson
Jim Barnhart

Commonwealth Office of Technology
Finance and Administration Cabinet
September 15, 2011

A Report to the Interim Joint Committee on Seniors, Veterans, Military Affairs, and Public Protection and the Interim Joint Committee on State Government on progress and activity by agencies of the Commonwealth to comply with standards to achieve public safety communications interoperability.

Table of Contents

Annual Report on Public Safety

Table of Figures

Table of Tables

Annual Report on Public Safety

Purpose

The purpose of this document is to provide the annual report on the progress and activities of the commonwealth to comply with standards to achieve public safety communications interoperability to the Kentucky legislature and responsible committees.

This report centers on the efforts of the Kentucky Wireless Interoperability Executive Committee (KWIEC) as the primary body responsible for guiding the state in these endeavors as well as the Public Safety Working Group (PSWG) which serves as the engineering arm of the KWIEC.

This report is submitted as required by KRS 42.738 (1) which states:

> ❖ *KRS 42.738 (1) - The executive director shall report by September 15 annually to the Interim Joint Committee on Seniors, Veterans, Military Affairs, and Public Protection and the Interim Joint Committee on State Government on progress and activity by agencies of the Commonwealth to comply with standards to achieve public safety communications interoperability.*

This report is divided into major and minor sections with appropriate KRS references. The major areas covered include:

- The Executive Summary and summary updates on the projects and operational programs tracked by and reported to the KWIEC
- Population distribution of Kentucky as it pertains to Public Safety
- The KWIEC's background and current membership
- Groups supporting the KWIEC
- Progress made toward the KWIECs mandates and goals
- Recommendations for the General Assembly as applicable to public safety communications

Authority

Since its creation in 2003, the KWIEC has operated as prescribed under the provisions and authority of Kentucky Revised Statutes 11-5161, 11-5162, and 11-5163. Over the years they were reviewed and re-codified as required.

In 2009 these statutes were repealed and reenacted as KRS 42.734, KRS 42.736, and KRS 42.738 respectively as part of the cabinet reorganization project as detailed in SB-181.

Executive Summary

Accomplishments

The accomplishments made by the state toward interoperability include:

- The upgraded Kentucky Emergency Warning System (KEWS) boasts a new state-of-the-art digital IP design which is currently carrying traffic in the Eastern half of the state with completion of the West anticipated by the end of the year

- The Voice Mutual Aid network is being augmented with several new UHF channels and is expected to be complete by the end of the year

- The statewide Mobile Data network was augmented by two new sites

- OEC guidance was endorsed by the KWIEC and is being used to evaluate projects for federal grants

- More agencies are complying with KWIEC instructions and 80% of all projects reviewed for federal grants meet OEC requirements

Challenges

Kentucky continues to experience challenges in attaining the level of interoperability desired by the KWIEC and the federal Office of Emergency Communications (OEC) in the Department of Homeland Security. The issues that Kentucky faces are nothing new and can be summed up in a few short bullets.

- Insufficient funding to successfully realize the interoperable goals and mandates

- The opposition of some first responder agencies to being interoperable with state, regional, or even neighboring agencies

- The KWIEC's lack of statutory enforcement authority to direct local agencies to only procure fully interoperable equipment

The challenges placed on the state by the Federal Government include:

- The unfunded Narrowbanding mandate

- Kentucky's loss of Louisville's status as a recipient of the Urban Areas Security Initiative (UASI) Nonprofit Security Grant Program (NSGP) along with the loss of funds provided by this program

- Indecision by the Federal government on the 'D' block and a national broadband network

Summary Report on Interoperability Programs and Projects

The Kentucky Emergency Warning System Digital Upgrade

KEWS East – 100% of the KEWS circuits have been cut onto this new network and are operating without incident. The 60 day performance evaluation was started but halted to patch an unresolved software problem. Full acceptance is targeted for December 2011.

KEWS West – All the civil work including power upgrades, tower reinforcements, and shelter replacements is complete. All the radio systems, routers, and multiplexers have been installed and circuits are expected to be cutover by year's end.

Project closure - Once the network is fully functional and accepted, the contract closure will begin. Ensuring all documents, drawings, and circuit plans are correct will take several months.

The Voice Mutual Aid and Interoperability Augmentation

The system has been expanded to provide additional UHF National Public Safety Telecommunications Council NPSTC interoperability channels. The backhaul circuits on the KEWS network have been requested and will be provisioned once the KEWS network is able to deploy the circuits. Once deployed, the radios will provide several additional UHF Mutual Aid Voice channels across the state.

The Mobile Data Program

The low speed mobile data network has been exceeding capacity for several years. Users continue to switch to cellular carrier air cards to provide access to data in almost all the metro areas of the state.

Even after the high speed national broadband data network is brought on line it is expected that the mobile data network will continue to provide service by augmenting this system in rural areas outside the footprint.

The KYWINS Messenger Program

The Kentucky Wireless Interoperability Network System (KYWINS) messenger continues to be used in many locations not constrained by low speed data systems. Again, once the broadband network is brought on-line it is expected that there will be a resurgences of users wishing to use the system.

Population distribution as it pertains to Public Safety

A majority of the population of Kentucky lives within 25 miles of the triangular region between the metro areas of Louisville, Cincinnati, and Lexington. This area is served by several major interstates, highways, railways and other transportation infrastructure, and of course contains the state capitol.
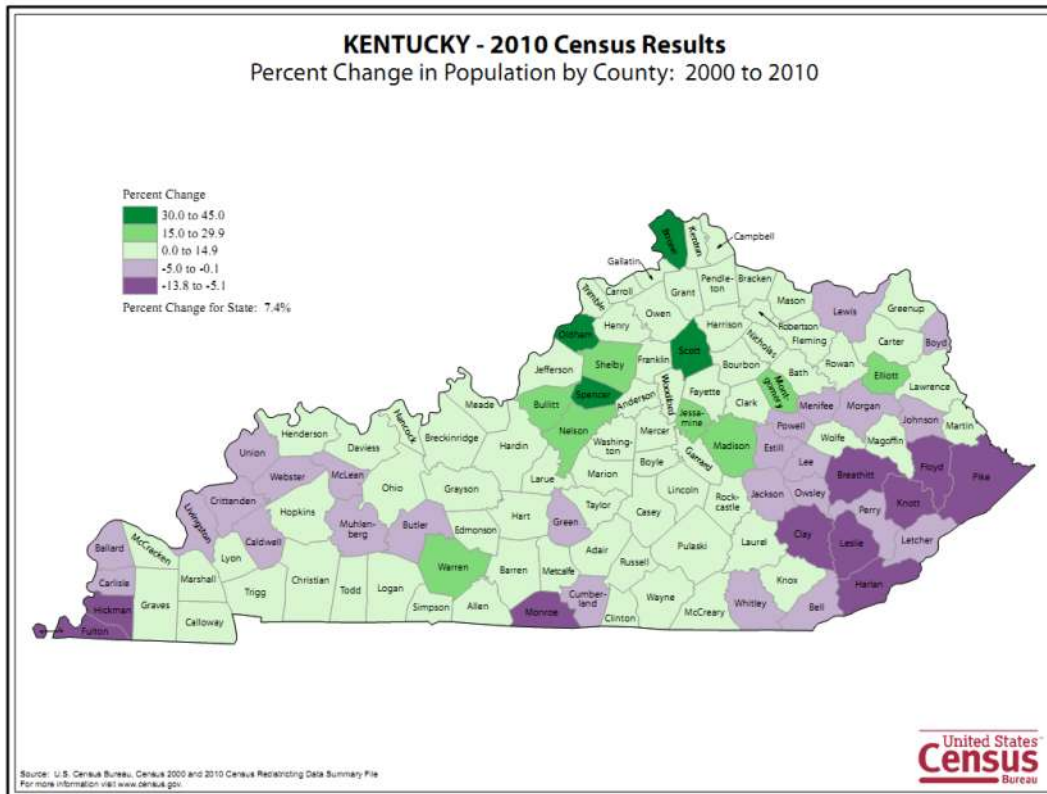
Figure 1 – Kentucky 2010 Census Results - Percent change

The Commonwealth of Kentucky had a population growth of 7.4% over the last decade which is just 2% under the national average. The population in 2000 was recorded at 4,041,769 and grew to 4,339,367 in 2010.   The increase of nearly 300,000 residents took place in just over two thirds of Kentucky's 120 counties. The majority of the population increase took place in the Louisville, Lexington, Bowling Green, and

Cincinnati metro areas[*]. Western Kentucky and a large part of the Appalachian region of Kentucky suffered negative population growth.

While Louisville was named one of the ten largest growing cities of the last decade it should be noted that the city of Louisville formed a consolidated government with Jefferson County after the last census. This accounts for much of the phenomenal 189% growth the census bureau reported[†].
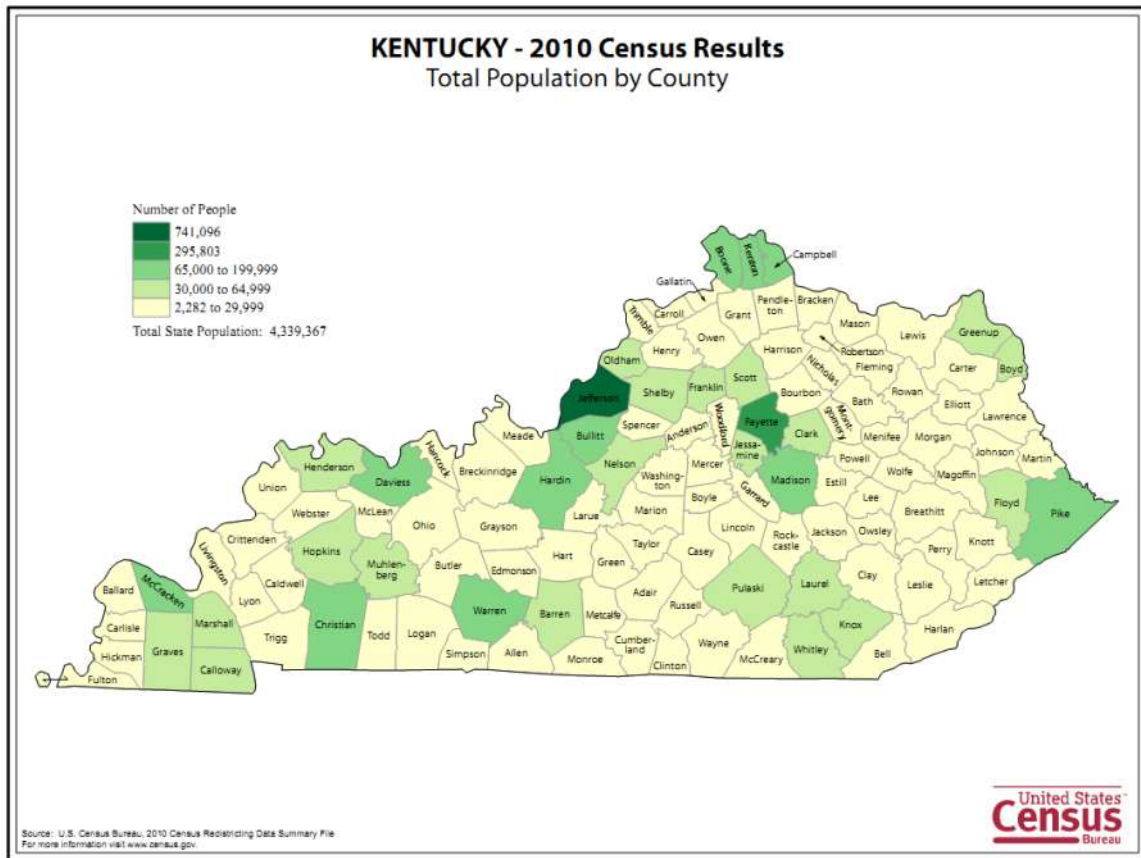
Figure 2 – Kentucky 2010 Census Results - Population change

Over the next several years Emergency Management, 911, health, fire, and law enforcement planners will use the Federal census population distribution information to make decisions on properly sizing and positioning first responder agencies and assets.

---

[*] According to the 2010 U.S. Census Bureau report
[†] 2000 city population = 256,231; 2010 city and county population = 741,096

The Kentucky Wireless Interoperability Executive Committee

Background

Portions of this section are reprinted from year to year with updates added as required. It is retained to provide readers unfamiliar with the KWIEC a summary of its history and the Bills and the resulting Statutes.

Three bills over the last seven years have shaped Kentucky's wireless interoperability position. These bills were House Bill 309, House Bill 226, and Senate Bill 181 and are described below.

HB 309

The 2003 Kentucky General Assembly passed HB 309 creating the Kentucky Wireless Interoperability Executive Committee (KWIEC), which is administered through the Commonwealth Office of Technology.

The committee benefits the Commonwealth by:

- ✤ Creating a nationally recognized name, the State Interoperability Executive Committee (SIEC), and structure as recommended by the Federal Communications Commission;
- ✤ Encouraging more involvement from interested agencies with the addition of local representatives from municipal and county government, police, fire, sheriff, EMS, and a 911 dispatch representative;
- ✤ Instituting an annual reporting mechanism whereby the chief information officer updates the Joint Interim Committee on Seniors, Veterans, Military Affairs, and Public Protection, and the Interim Committee on State Government;
- ✤ Addressing communications interoperability, a critically important homeland security issue;
- ✤ Advising and making recommendations to the chief information officer of the Commonwealth regarding strategic wireless initiatives, in order to achieve public safety voice and data communications interoperability.

Annual Report on Public Safety

HB 226

In 2004, HB 226 was passed by the 2004 General Assembly and signed into law by Governor Ernie Fletcher. The Bill amended KRS 11.5162 to expand the definitions of "frequency," "interoperability," and "standards," and create definitions for "public safety shared infrastructure" and "primary wireless public safety voice or data communications systems," and excludes "911" telephone systems from the definition of "primary wireless public safety voice or data communications systems."

With the passage of HB 226, KRS 11.5163 was amended to include these requirements:

- The development and recommendation of required architecture and standards will ensure that new or upgraded Commonwealth public safety communications systems will interoperate.

- The Kentucky Wireless Interoperability Executive Committee shall be responsible for the evaluation and recommendation of all wireless communications architecture, standards, and strategies.

- All state agencies in the Commonwealth shall present all project plans for primary wireless public safety voice or data communications systems for review and recommendation by the committee, and the committee shall forward the plans to the chief information officer for final approval. Local government entities shall present project plans for primary wireless public safety voice or data communications systems for review and recommendation by the Kentucky Wireless Interoperability Executive Committee.

- The committee shall develop funding and support plans that provide for the maintenance of and technological upgrades to the public safety shared infrastructure, and shall make recommendations to the chief information officer, the Governor's Office for Policy and Management, and the General Assembly.

- The chief information officer shall examine the project plans for primary wireless public safety voice or data communications systems of state agencies and shall determine whether they meet the required architecture and standards for primary wireless public safety voice or data communications system.

Annual Report on Public Safety

SB 181

In 2009, SB 181 was passed by the General Assembly and signed into law by Governor Steve Beshear. With the passage of SB 181, several statutes were repealed and reenacted. As it pertains to the KWIEC the following occurred:

- KRS 11.5161 was repealed and reenacted as KRS 42.734 without change to content.

- KRS 11.5162 was repealed and reenacted as KRS 42.736 without change to content.

- KRS 11.5163 was repealed and reenacted as KRS 42.738 with the following changes.
    - The membership of the KWIEC was reduced to 20 members.
    - The 'Director of 911' position was eliminated as a voting member of the board.

Kentucky Revised Statutes

The KWIEC operates under the laws described in KRS 42.734, KRS 42.736, and KRS 42.738. These statutes are available online at:

http://www.lrc.ky.gov/KRS/042-00/734.PDF

http://www.lrc.ky.gov/KRS/042-00/736.PDF

http://www.lrc.ky.gov/KRS/042-00/738.PDF

Kentucky Senate and House Bills

The entire text of HB-309 is available online at:
http://www.lrc.ky.gov/record/03rs/hb309.htm

The entire text of HB-226 is available online at:
http://www.lrc.ky.gov/record/04rs/hb226.htm

The entire text of SB-181 is available online at:
http://www.lrc.ky.gov/record/09rs/SB181.htm

Annual Report on Public Safety

KWIEC Membership

Of the twenty KWIEC members the majority are assigned by virtue of the position they hold within their agency while the remaining members are appointed by the Governor. KRS 42.738 (5) describes the makeup of the body and is included below.

❖ *KRS 42.738 (5) - The Kentucky Wireless Interoperability Executive Committee shall consist of twenty (20) members as follows:*
   a) *A person knowledgeable in the field of wireless communications appointed by the executive director who shall serve as chair;*
   b) *The executive director of the Office of Infrastructure Services, Commonwealth Office of Technology;*
   c) *The executive director of Kentucky Educational Television, or the executive director's designee;*
   d) *The chief information officer of the Transportation Cabinet;*
   e) *The chief information officer of the Justice and Public Safety Cabinet;*
   f) *The chief information officer of the Department of Kentucky State Police;*
   g) *The commissioner of the Department of Fish and Wildlife Resources, or the commissioner's designee;*
   h) *The chief information officer of the Environmental and Public Protection Cabinet;*
   i) *The director of the Division of Emergency Management, Department of Military Affairs;*
   j) *The executive director of the Kentucky Office of Homeland Security;*
   k) *The chief information officer, Department for Public Health, Cabinet for Health and Family Services;*
   l) *A representative from an institution of postsecondary education appointed by the Governor from a list of three (3) names submitted by the president of the Council on Postsecondary Education;*
   m) *The executive director of the Center for Rural Development, or the executive director's designee;*
   n) *A representative from a municipal government to be appointed by the Governor from a list of three (3) names submitted by the Kentucky League of Cities;*
   o) *A representative from a county government to be appointed by the Governor from a list of three (3) names submitted by the Kentucky Association of Counties;*
   p) *A representative from a municipal police department to be appointed by the Governor from a list of three (3) names submitted by the Kentucky Association of Chiefs of Police;*
   q) *A representative from a local fire department to be appointed by the Governor from a list of three (3) names submitted by the Kentucky Association of Fire Chiefs;*
   r) *A representative from a county sheriff's department to be appointed by the Governor from a list of three (3) names submitted by the Kentucky Sheriffs' Association;*
   s) *A representative from a local Emergency Medical Services agency to be appointed by the Governor from a list of three (3) names submitted by the Kentucky Board of Emergency Medical Services; and*
   t) *A representative from a local 911 dispatch center to be appointed by the Governor from a list of three (3) names submitted by the Kentucky Chapter of the National Emergency Number Association/Association of Public Safety Communications Officials.*

❖ *KRS 42.738 (6) - Appointed members of the committee shall serve for a two (2) year term. Members who serve by virtue of an office shall serve on the committee while they hold that office.*

Annual Report on Public Safety

The KWIEC is staffed by senior decision makers or their designated representatives. These members are representing a cross section of agencies which have a stake in wireless communications operability and interoperability. This ensures that the key stakeholders have a say in the overall direction and are part of any decision affecting wireless communications interoperability across state and local agencies.

The table below lists the current membership of the KWIEC.

Name	Representing
Jim Barnhart	Chairperson
Terry Stephens	Commonwealth Office of Technology
Fred Engel	Kentucky Educational Television
Dan Mauer	Transportation Cabinet
Don Pendleton	Justice Cabinet
Brad Bates	Kentucky State Police
Mike Fields	Department of Fish and Wildlife Resources
Ken Jorette	Natural Resources and Environmental Protection
Rodney Hayes	Division of Emergency Management
Shelby Lawson	Kentucky Office of Homeland Security
Rodney Murphy	Cabinet for Health and Family Services
Pamela Collins	Council on Postsecondary Education
Lonnie Lawson	The Center for Rural Development
Rebecca Hopkins	Kentucky League of Cities
Ted Collins	Kentucky Association of Counties
Michael Ward	Kentucky Association of Chiefs of Police
Michael Gribbin	Association of Fire Chiefs
Wayne Wright	Kentucky Sheriff's Association
Bob Hammonds	Kentucky Board of Emergency Medical Services
Mitch Mitchell	Kentucky National Emergency Number Association

Table 1 – KWIEC Membership

KWIEC Meetings

❖ *KRS 42.738 (7) - The committee shall meet quarterly, or as often as necessary for the conduct of its business. A majority of the members shall constitute a quorum for the transaction of business. Members' designees shall have voting privileges at committee meetings.*

The Kentucky Wireless Interoperability Executive Committee was assembled four times (once each quarter) since the last report in 2010.   Meetings were typically held the last week of each Quarter.

Minutes, briefing slides, and other documents are available at the KWIEC website for download at:

http://www.kwiec.ky.gov/execcommittee/minutes.htm

For any additional information, documentation, or reports the KWIEC Facilitator should be contacted.

KWIEC Support

The KWIEC is supported by a dedicated Facilitator, the PSWG, and the FIWG. Additionally both a dedicated website and listserv are used for outreach.

Dedicated KWIEC Facilitator

The KWIEC plays a vital role in guiding the public safety wireless communications and interoperability efforts, projects, and initiatives of the commonwealth. As with all committees, the KWIEC and its subcommittees and workgroups require support. To that end, the Commissioner of the Commonwealth Office of Technology has assigned a dedicated KWIEC Facilitator to provide the KWIEC with a single Point of Contact with which to work. The Facilitator will act as the primary point of contact for any issues dealing with the KWIEC and will maintain the KWIEC website and the listserv.

In addition to supporting the KWIEC, the Facilitator will assist any workgroups or subcommittees dedicated to the KWIEC. The Facilitator will act as a non-voting member of these groups to avoid any conflict of interest and will contribute to each of these groups as desired by the chair of that group.

The individual assigned to this position will also prescreen all project assessments and work with local and state agencies in submitting their project assessments. Projects which fall into the pre-approved category will be reviewed, evaluated, and approved by the Facilitator. The Facilitator will also work with granting agencies such as the Kentucky Office of Homeland Security and the Justice Department to ensure that the KRS is adhered to for primary wireless communications projects.

The individual assigned to this position will also plan and conduct each meeting of the KWIEC and will be available to support any KWIEC members with KWIEC business when requested. This individual will also work with the Governor's Office, the Legislative Research Commission, and other key agencies in support of the KWIEC.

Finally, the Facilitator will write the Annual Public Safety Report (this report) with input from key agencies, schedule its printing if desired, and provide it to the appropriate committees and legislative bodies. For information on this report or any KWIEC related issue please contact the KWIEC Facilitator:

Chuck Miller, PMP
(502) 564-5397
Charlesr.miller@ky.gov

Annual Report on Public Safety

KWIEC Website

The website (www.kwiec.ky.gov) continues to be used as the KWIEC's primary system for presenting information to first responder agencies and the general public. Information including meetings, current events, industry specific information, frequently required documents and URLs are a single click away from the primary page.

The website also allows citizens or agencies to use an email link to request information, make inquiries, or contact the membership of the KWIEC or the PSWG through the Facilitator.

KWIEC listserv

The listserv is a typical email list server which has been set up for individuals or agencies interested in communications interoperability. Users need only to sign up and receive approval from the administrator to begin using the listserv to communicate with others with similar interest.

The listserv is administered by the KWIEC Facilitator and is open to the public to facilitate communications interoperability communications among its members. Members can easily use it to collaborate with other members with similar interest. This system can be used to disseminate approved training documentation, whitepapers, URLs, and other information of interest to listserv members with a simple email.

Public Safety Working Group (PSWG)

- ❖ *KRS 42.738 (9) - The Public Safety Working Group is hereby created for the primary purpose of fostering cooperation, planning, and development of the public safety frequency spectrum as regulated by the Federal Communications Commission, including the 700 MHz public safety band. The group shall endeavor to bring about a seamless, coordinated, and integrated public safety communications network for the safe, effective, and efficient protection of life and property. The Public Safety Working Group membership and other working group memberships deemed necessary shall be appointed by the chair of the Kentucky Wireless Interoperability Executive Committee.*

The Public Safety Working Group has been described as the Engineering Arm of the KWIEC since it is comprised of subject matter experts in wireless communications. Furthermore, the group is chaired by the state wireless communication interoperability coordinator and directly supported by the KWIEC Facilitator. When the KWIEC makes a requirement, this group is typically responsible to execute it. This group evaluates all wireless communications architecture, standards, and strategies of interest to the KWIEC and then reports on their findings and recommendations.

The Public Safety Working Group has been tasked with the following responsibilities:
- ➢ Evaluate new technology and technical solutions to planned projects.
- ➢ Using the State Communications Interoperability Plan (SCIP) as a source, begin efforts to create a long term (ten year or more) plan which makes the eventual voice and data convergence of technology a priority.
- ➢ Publish recommended minimum requirements for all radio systems.
- ➢ Maintain an inventory of State radio assets.
- ➢ Conduct an annual review of State radio infrastructures.
- ➢ Recommend projects to the KWIEC.
- ➢ Provide periodic briefings to the KWIEC as required.

The members of the PSWG are shown in the table below.

Name	Representing	Position
Derek Nesselrode	State Wireless Interoperability Coordinator / Kentucky State Police	Chair
Bob Stephens	Office of Emergency Management	Co-Chair
Danny Ball	Center for Rural Development	Member
Dave Barker	Department of Military Affairs	Member
Drew Chandler	Department for Public Health	Member
Jeff Mitchell	Commonwealth Office of Technology / Kentucky Emergency Warning System	Member
Ron Pannell	Louisville Metro Government	Member
Paul See	Lexington Division of Fire & Emergency Services	Member

Table 2 – PSWG Membership

Funding Initiatives Working Group (FIWG)

❖ *KRS 42.738 (3) - The committee shall develop funding and support plans that provide for the maintenance of and technological upgrades to the public safety shared infrastructure, and shall make recommendations to the executive director, the Governor's Office for Policy and Management, and the General Assembly.*

❖ *KRS 42.736 (5) - Public safety shared infrastructure" means any component that by the nature of its function or physical characteristics can be used by multiple agencies to implement or support primary wireless public safety voice or data communications systems. This shall include but not be limited to towers, equipment shelters, radios, and other electronic equipment, backbone communications networks, and communications-related software.*

❖ *KRS 42.738 (9) - … The Public Safety Working Group membership and other working group memberships deemed necessary shall be appointed by the chair of the Kentucky Wireless Interoperability Executive Committee.*

❖ *KRS 42.738 (10) - The committee may establish additional working groups as determined by the committee.*

The Funding Initiatives Workgroup was created to address the statutory requirements identified in KRS 42.738 (3). The KWIEC membership felt that a dedicated workgroup was needed to address the requirement as described.

The current membership of this group is shown in the table below.

Name	Representing	Position
Brad Bates	Kentucky State Police	Chair
Lonnie Lawson	Center for Rural Development	Co-Chair
Pamela Collins	Council on Postsecondary Education	Member
Jeff Mitchell	Commonwealth Office of Technology	Member

Table 3 – FIWG Membership

KWIEC Mandates and Goals

KWIEC Mandates

The KWIEC mandates as described by KRS 42.738 are listed below. They have been divided by KRS subsection to properly describe the actions taken by the KWIEC in each of these areas and are expanded on in the following sections.

I. *KRS 42.738 (1) - The executive director shall establish and implement a statewide public safety interoperability plan. This plan shall include the development of required architecture and standards that will ensure that the new or upgraded Commonwealth public safety communications systems will interoperate.*

II. *KRS 42.738 (1) (Continued) - The Kentucky Wireless Interoperability Executive Committee shall be responsible for the evaluation of all wireless communications architecture, standards, and strategies. The executive director shall provide direction, stewardship, leadership, and general oversight of information technology and information resources.*

III. *KRS 42.738 (1) (Continued) - The executive director shall report by September 15th annually to the Interim Joint Committee on Seniors, Veterans, Military Affairs, and Public Protection and the Interim Joint Committee on State Government on progress and activity by agencies of the Commonwealth to comply with standards to achieve public safety communications interoperability.*

IV. *KRS 42.738 (2) – The Kentucky Wireless Interoperability Executive Committee shall serve as the advisory body for all wireless communications strategies presented by agencies of the Commonwealth and local governments. All state agencies in the Commonwealth shall present all project plans for primary wireless public safety voice or data communications systems for review and recommendation by the committee and the committee shall forward the plans to the chief information officer for final approval. Local government entities shall present project plans for primary wireless public safety voice or data communications systems for review and recommendation by the Kentucky Wireless Interoperability Executive Committee.*

V. *KRS 42.738 (3) - The committee shall develop funding and support plans that provide for the maintenance of and technological upgrades to the public safety shared infrastructure, and shall make recommendations to the executive director, the Governor's Office for Policy and Management, and the General Assembly.*

VI. *KRS 42.738 (4) - The executive director shall examine the project plans for primary wireless public safety voice or data communications systems of state agencies as required by subsection (2) of this section, and shall determine whether they meet the required architecture and standards for primary wireless public safety voice or data communications system.*
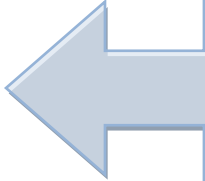
Establish and Implement the Statewide Public Safety Interoperability Plan (SCIP)

❖ *KRS 42.738 (1) - The executive director shall establish and implement a statewide public safety interoperability plan. This plan shall include the development of required architecture and standards that will ensure that the new or upgraded Commonwealth public safety communications systems will interoperate.*

As in previous years, Kentucky's Statewide Communications Interoperability Plan (SCIP)[‡] was reviewed and revised to keep it current and applicable. Last year the OEC made several minor changes to their National Emergency Communications Plan (NECP) which was captured in this year's review and revision cycle. In June 2011 the Facilitator and the PSWG completed the recommended updates and submitted it to the KWIEC for approval. In July 2011 the KWIEC approved publishing the revision which is now available on the KWIEC website.

The July 2011 revision of the SCIP was provided to the Federal Office of Emergency Communications (OEC) shortly after it was approved for publishing.

The SCIP is reviewed and revised annually since it remains the state's primary tool for planning and documenting interoperability initiatives.

[‡] This plan can be found on the KWIEC website at www.kwiec.ky.gov and is available for download as a pdf file.

Evaluation of Wireless Communications Architecture, Standards and Strategies

❖ *KRS 42.738 (1*) *(Continued) - The Kentucky Wireless Interoperability Executive Committee shall be responsible for the evaluation of all wireless communications architecture, standards, and strategies. The executive director shall provide direction, stewardship, leadership, and general oversight of information technology and information resources.*

In previous years, the KWIEC had three primary areas to be concerned about. These consisted of the P-25 interoperability efforts, the FCC's Narrowbanding mandate, and the 'D Block' frequencies deliberations. In addition to these the KWIEC must now also consider the FCC's National Broadband initiative in any wireless data planning or implementation efforts. As before, the KWIEC continues to follow, endorse, and use the OEC guidance in its project planning, evaluation, and approvals.

The P-25 Standard

The Association of Public-Safety Communications Officials (APCO) Project-25 standard remains the only open, cross platform standard endorsed by APCO, the OEC, and the KWIEC. The arguments for using proprietary communications systems are basically moot for all state agencies and full interoperability is easily achievable on all state systems. Unfortunately, the local agencies continue to work with various vendors who are more interested in selling equipment and locking agencies into their particular brand than they are in ensuring agencies are able to communicate with other agencies.

The fact that the cost gap between P-25, analog, and proprietary digital radio systems is narrowing, makes deploying a P-25 solution more sensible than ever. Shortsighted spending strategies to buy as many units as possible regardless of system type will cost more in the long run. This actually caused vendors to price P-25 high, and their proprietary systems at or below cost in an effort to lock the users into one system. The P-25 standard still remains the only way that digital interoperability can be achieved at the radio level regardless of manufacturer. Other cross connection systems designed to make proprietary systems interoperable are costly, require user intervention, and will not allow radios to interoperate in the simplex mode.

Annual Report on Public Safety

Narrowbanding

There remains just over one year before the FCC's narrowbanding mandatory cutoff of January 1, 2013. Unfortunately, most agencies rely on grants and other funding streams to pay for these Federal unfunded mandates, but with grant funds being reduced and tax revenues down, many agencies are expected to have problems meeting this date.

While it is not practical to get an exact count of each and every radio in use by Kentucky's first responders, it was possible to get a listing of all the fixed licenses for Kentucky in the FCC database[§]. Using just the license data, it can be seen that Kentucky has upgraded just over half of the fixed licenses in the VHF and UHF bands. For the 3% of Kentucky's first responders fortunate enough to have licenses in the 800 MHz band, they will not be affected by the FCC's narrowbanding mandate.

Important Narrowbanding Information

- The narrowbanding change affects frequencies from 150 – 174 MHz; 421 – 430 MHz; and 450 -- 512 MHz
- Channel centers remain unchanged
- All stations must be using 12.5 kHz bandwidth (or equivalent by Jan 1, 2013)
- No date has been set for a mandatory switch to 6.25 kHz bandwidth
- Paging channels 152.0075 MHz and 157.45 MHz can remain 25.0 kHz bandwidth

Facts to be considered

The proliferation of rumors and misleading information is still a concern. A few misinformed representatives are circulating <u>incorrect</u> information such as.

- Licensees <u>must</u> implement digital technology – *Not true, agencies may still use analog narrowband if they prefer*
- Licensees will get <u>twice</u> as many channels – *Not true*
- Licensees will need to retune their radios to different frequencies – *No; the center frequency stays the same but the channel must to be set to 12.5 KHz*
- The FCC will never know if you don't use narrowband – *Incorrect; also interference may occur to existing systems or new licensees*

[§] The listing of all licenses by type and county is included further in this document.

> ➢ You will need a new frequency and a new license – *No frequency change is required and licenses only need to be updated with a narrowband emission designator*
> ➢ You will lose half your coverage distance when you switch to narrowband – *No, you will lose about 3dB of coverage as planned on a propagation map. You may have some impact on coverage, especially if operating on a fringe area. To offset this, users may need to consider increasing power, increasing antennas heights, employing more efficient hardline and/or antennas, or in extreme cases adding additional repeaters*

FCC Guidance including waivers

Recently the FCC released a public notice reminding agencies of the narrowbanding mandate requirements. For the first time in years the FCC has indicated that they will consider waiving the cutoff date for those agencies and users that have an <u>authorized</u> reason for not being able to make the date. Unfortunately, lack of funding or planning will not be considered as viable reasons for a waiver.

It is unclear if the FCC will require first responder agencies to shut down their non-narrowbanded communications lifelines after the cutoff date. They have indicated that they have every intention of doing so, but to do so certainly seems reckless at best.

Annual Report on Public Safety

Listing of FCC Licenses by County

The FCC listing of Kentucky's fixed transmitters reported to the FCC is shown below on a county level and is divided out by call sign and number of fixed transmitters. This list is accurate as of September 1, 2011, but it must be remembered that this is a dynamic database and subject to daily change as users update their licenses with the FCC.

# NB = Narrowband	# WB = Wideband

COUNTY	By Call Sign				By # of Fixed Transmitters			
	# NB	# WB	Total	% NB	# NB	# WB	Total	% NB
Total	961	1123	2084	46%	2751	2305	5056	54%
ADAIR	5	11	16	31%	16	20	36	44%
ALLEN	8	4	12	67%	21	14	35	60%
ANDERSON	5	6	11	45%	17	7	24	71%
BALLARD	8	3	11	73%	12	3	15	80%
BARREN	14	12	26	54%	28	14	42	67%
BATH	10	4	14	71%	28	5	33	85%
BELL	12	20	32	38%	37	37	74	50%
BOONE	18	5	23	78%	53	19	72	74%
BOURBON	8	6	14	57%	14	8	22	64%
BOYD	18	13	31	58%	51	36	87	59%
BOYLE	9	5	14	64%	25	7	32	78%
BRACKEN	1	5	6	17%	4	7	11	36%
BREATHITT	5	5	10	50%	7	12	19	37%
BRECKINRIDGE	8	8	16	50%	20	10	30	67%
BULLITT	9	11	20	45%	42	33	75	56%
BUTLER	6	4	10	60%	16	5	21	76%
CALDWELL	5	6	11	45%	8	7	15	53%
CALLOWAY	8	14	22	36%	25	18	43	58%
CAMPBELL	19	16	35	54%	47	59	106	44%
CARLISLE	5	4	9	56%	6	4	10	60%
CARROLL	8	6	14	57%	29	13	42	69%
CARTER	10	12	22	45%	27	22	49	55%
CASEY	11	9	20	55%	35	13	48	73%

Annual Report on Public Safety

CHRISTIAN	7	29	36	19%	35	46	81	43%
CLARK	11	2	13	85%	41	5	46	89%
CLAY	6	15	21	29%	19	47	66	29%
CLINTON	2	2	4	50%	2	5	7	29%
CRITTENDEN	3	7	10	30%	10	8	18	56%
CUMBERLAND	10	7	17	59%	23	15	38	61%
DAVIESS	6	9	15	40%	20	13	33	61%
EDMONSON	4	3	7	57%	5	19	24	21%
ELLIOTT	2	5	7	29%	4	5	9	44%
ESTILL	3	5	8	38%	3	7	10	30%
FAYETTE	22	21	43	51%	90	86	176	51%
FLEMING	7	5	12	58%	21	6	27	78%
FLOYD	7	18	25	28%	10	41	51	20%
FRANKLIN	12	19	31	39%	14	54	68	21%
FULTON	8	6	14	57%	14	6	20	70%
GALLATIN	2	2	4	50%	2	2	4	50%
GARRARD	3	3	6	50%	7	5	12	58%
GRANT	10	5	15	67%	20	11	31	65%
GRAVES	12	18	30	40%	24	29	53	45%
GRAYSON	2	11	13	15%	2	20	22	9%
GREEN	6	2	8	75%	7	3	10	70%
GREENUP	12	19	31	39%	40	24	64	63%
HANCOCK	1	3	4	25%	2	9	11	18%
HARDIN	17	13	30	57%	76	29	105	72%
HARLAN	13	24	37	35%	88	42	130	68%
HARRISON	13	3	16	81%	26	8	34	76%
HART	8	4	12	67%	21	13	34	62%
HENDERSON	20	8	28	71%	58	23	81	72%
HENRY	2	10	12	17%	4	13	17	24%
HICKMAN	6	5	11	55%	15	11	26	58%
HOPKINS	13	21	34	38%	31	45	76	41%
JACKSON	6	7	13	46%	40	12	52	77%
JEFFERSON	19	74	93	20%	91	248	339	27%
JESSAMINE	7	10	17	41%	16	16	32	50%
JOHNSON	6	15	21	29%	11	32	43	26%
KENTON	35	26	61	57%	86	61	147	59%

KNOTT	3	12	15	20%	15	22	37	41%
KNOX	8	12	20	40%	44	21	65	68%
LARUE	3	5	8	38%	3	7	10	30%
LAUREL	14	14	28	50%	46	33	79	58%
LAWRENCE	8	6	14	57%	18	7	25	72%
LEE	5	2	7	71%	13	2	15	87%
LESLIE	5	6	11	45%	17	9	26	65%
LETCHER	4	12	16	25%	22	15	37	59%
LEWIS	8	4	12	67%	17	6	23	74%
LINCOLN	8	2	10	80%	14	3	17	82%
LIVINGSTON	6	10	16	38%	15	22	37	41%
LOGAN	9	10	19	47%	31	20	51	61%
LYON	7	6	13	54%	19	13	32	59%
MADISON	10	18	28	36%	27	36	63	43%
MAGOFFIN	6	4	10	60%	11	8	19	58%
MARION	3	8	11	27%	3	13	16	19%
MARSHALL	8	18	26	31%	12	23	35	34%
MARTIN	1	7	8	13%	5	14	19	26%
MASON	1	9	10	10%	4	15	19	21%
MCCRACKEN	7	18	25	28%	29	29	58	50%
MCCREARY	2	11	13	15%	2	18	20	10%
MCLEAN	3	4	7	43%	7	6	13	54%
MEADE	8	12	20	40%	25	19	44	57%
MENIFEE	10	1	11	91%	25	1	26	96%
MERCER	11	2	13	85%	29	2	31	94%
METCALFE	3	6	9	33%	3	7	10	30%
MONROE	6	4	10	60%	18	11	29	62%
MONTGOMERY	10	3	13	77%	19	5	24	79%
MORGAN	5	7	12	42%	18	10	28	64%
MUHLENBERG	24	7	31	77%	58	15	73	79%
NELSON	1	12	13	8%	2	17	19	11%
NICHOLAS	2	2	4	50%	3	2	5	60%
Not Specified	1	0	1	100%	1	0	1	100%
OHIO	17	5	22	77%	69	14	83	83%
OLDHAM	11	5	16	69%	60	16	76	79%
OWEN	9	7	16	56%	21	13	34	62%

OWSLEY	9	2	11	82%	24	3	27	89%
PENDLETON	2	6	8	25%	2	35	37	5%
PERRY	8	15	23	35%	31	24	55	56%
PIKE	22	21	43	51%	103	47	150	69%
POWELL	9	3	12	75%	24	4	28	86%
PULASKI	15	30	45	33%	39	60	99	39%
ROBERTSON	1	2	3	33%	1	3	4	25%
ROCKCASTLE	8	6	14	57%	14	10	24	58%
ROWAN	8	12	20	40%	24	21	45	53%
RUSSELL	3	7	10	30%	4	8	12	33%
SCOTT	3	8	11	27%	4	16	20	20%
SHELBY	9	13	22	41%	12	17	29	41%
SIMPSON	2	9	11	18%	5	18	23	22%
SPENCER	3	1	4	75%	3	1	4	75%
TAYLOR	4	8	12	33%	13	21	34	38%
TODD	8	2	10	80%	24	2	26	92%
TRIGG	5	10	15	33%	6	14	20	30%
TRIMBLE	4	1	5	80%	7	2	9	78%
UNION	2	14	16	13%	10	21	31	32%
WARREN	6	18	24	25%	7	54	61	11%
WASHINGTON	3	6	9	33%	20	16	36	56%
WAYNE	13	4	17	76%	34	4	38	89%
WEBSTER	6	6	12	50%	8	10	18	44%
WHITLEY	12	18	30	40%	37	23	60	62%
WOLFE	3	1	4	75%	9	1	10	90%
WOODFORD	13	4	17	76%	15	4	19	79%

Table 4 – FCC Licenses by County

The 'D' Block

Senator Jay Rockefeller introduced a bill this year aimed at creating a nationwide broadband network for public safety by dedicating the 10MHz 'D block' frequencies to the first responders.   The FCC's proposal on the network differs in that the FCC wants to auction off the 'D Block' (stating that it is worth billions of dollars) to create a private network whereby first responders are allowed to use the network in emergencies.

Kentucky's first responders and the KWIEC certainly support the Rockefeller Bill, and it is hoped that Congress chooses the more expensive but right plan of action. The provisions of this bill include:

 > *Establish a framework for the deployment of a nationwide, wireless interoperable broadband public safety network*

 > *Allocate the 10 megahertz 'D-block' to public safety*

 > *Require the FCC to develop standards to ensure nationwide interoperability*

 > *Require the FCC to establish standards which would allow public safety agencies to lease unused capacity to non-public safety agencies to aid in funding the network*

 > *Allows existing license holders to 'sell back' their channels[**]*
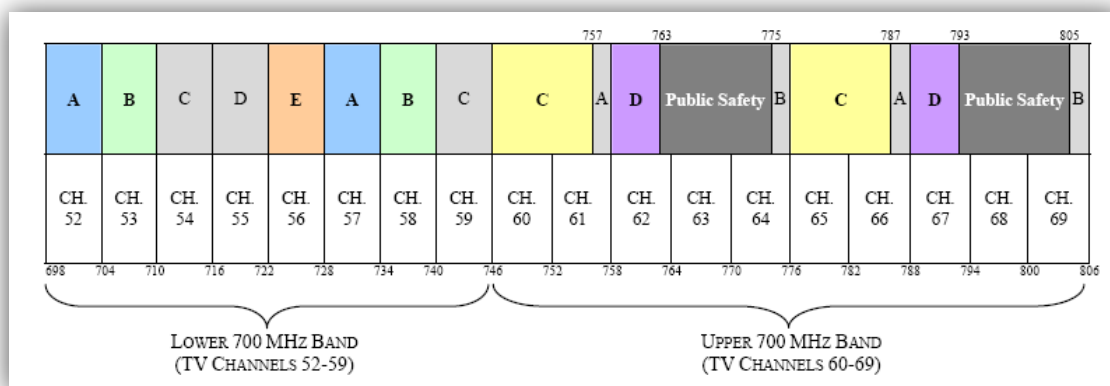
Figure 3 – Revised 700 MHz Block Plan

[**] It is actually far more complicated than just selling back since spectrum must be returned and auctioned

National Broadband Network

The Federal government is in the process of determining which direction they will be taking with the national broadband data network. At this point they have decided that the network will be a Long Term Evolution based technology, but as explained previously, there is still a debate on who will build and control the system.

Public safety officials are quick to point out the public/private partnership failures, most notably the networks in New Orleans during Katrina, and even more recently the 5.8 magnitude earthquake in Virginia which quickly overwhelmed the existing cell network.

An emergency network that cannot be used in an emergency is worthless, perhaps even detrimental since it provides a false sense of security which may allow other emergency response measures to be diluted or even ignored.

On the other hand, advocates indicate that technology is readily available which will prioritize first responder traffic over routine traffic. They are also quick to point out that funding a national broadband network without private involvement will be prohibitively expensive and may kill the whole proposal.

Kentucky's low speed Mobile Data network will continue to serve the state's first responders while the Federal government decides which course of action to choose.

Annual Report on Public Safety

Report on Compliance

❖ *KRS 42.738 (1) (Continued) - The executive director shall report by September 15th annually to the Interim Joint Committee on Seniors, Veterans, Military Affairs, and Public Protection and the Interim Joint Committee on State Government on progress and activity by agencies of the Commonwealth to comply with standards to achieve public safety communications interoperability.*

Kentucky continues to use the SAFECOM[††] Interoperability Continuum to measure its interoperability level as desired by the Office of Emergency Communications. There is no right or wrong, and each state is free to choose what works best for them on this continuum. Over the last several years, Kentucky continues to fall as the diagram below shows. Of course, as the commonwealth's needs change, so too will our position on the continuum.
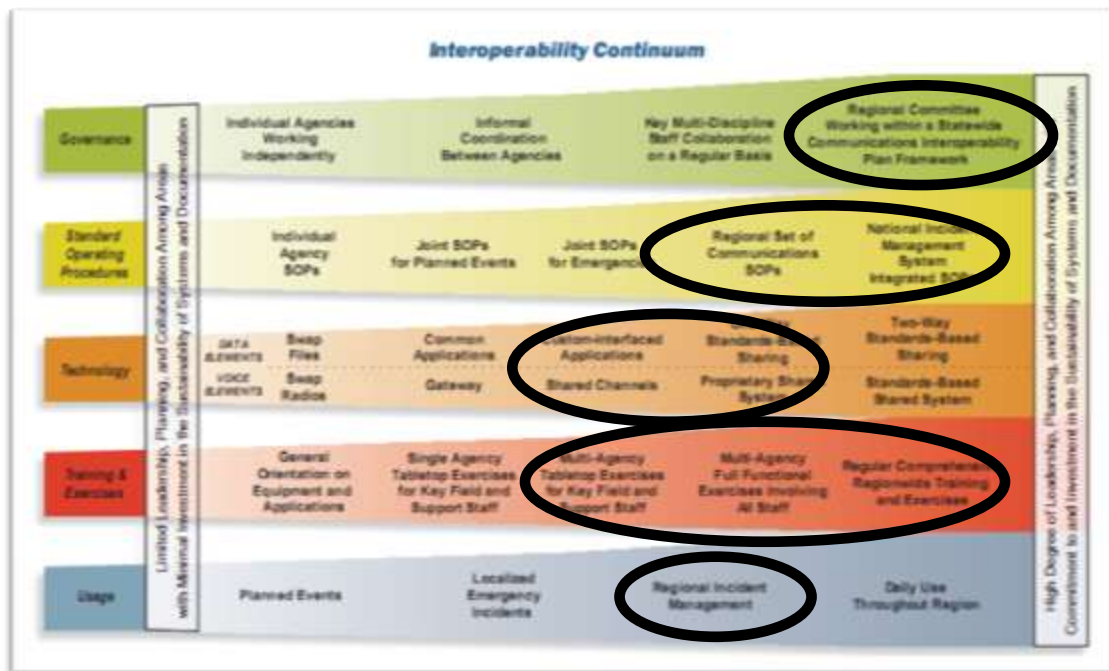
Figure 4 – Kentucky's Interoperability Continuum

Summary explanations are presented in the following pages.

[††] SAFECOM is a Homeland Security interoperability program

Summary Explanations for the Interoperability Continuum

Governance
- ➤ The KWIEC is the statewide committee which works with regional agencies such as the Kentucky State Police headquarters elements and the Department of Military Affairs regional Posts, Armories, and Depots. The makeup of the KWIEC also has regional representation including the association of Sheriffs, Fire, and others.

Standard Operating Procedures (SOPs)
- ➤ Depending on the agency and incident, Kentucky covers both Regional SOPs and National Incident Management System (NIMS) SOPs. Kentucky uses and trains its first responders on NIMS recommendations and requirements and regional SOPs are written to comply with NIMS requirements.

Technology
- ➤ Kentucky has implemented a network of "Shared Channels" for its means of interoperable voice communications through its Voice Mutual Aid Program. Kentucky has implemented a "Proprietary Shared System" for its means of interoperable data communications through its Mobile Data Network. Kentucky was also in the early stages of evaluating broadband data, but has opted to wait until the FCC makes a firm decision on the national broadband network before proceeding.

Training and Exercise
- ➤ Kentucky has conducted several exercises in support of the World Equestrian Games and the Kentucky Derby over this last year. Several minor local and regional exercises were conducted by local agencies without state involvement. It is recognized that Kentucky needs to develop a more comprehensive long term recurring exercise and training program owned by an accountable agency.

Usage
- ➤ Regional incident management is used and exercised in Kentucky. This aligns well with our voice interoperability system which uses KSP regional monitoring.

Communications Unit Leader (COM-L) Training

If any area were to be considered in dire need of resuscitation it would be Kentucky's Communications Leadership courses. These classes train incident management and display their true worth in disaster situations. Since Kentucky has had portions of the state declared a disaster in eight of the last ten years this training should not be discounted.

While many states consider it critical to have at least two Com-L leaders trained per county, it must be noted, and embarrassingly so, that Kentucky with its 120 counties has only trained a handful of COM-L certified leaders. Where we should have nearly 250 certified, we have less than a dozen across the state.

Plans to conduct training in 2011 fell through, but thankfully, the Kentucky Division of Emergency Management has scheduled and will conduct two Communications Unit Leader courses in 2012. The COM-L class is targeted for all local, regional, state and federal cross disciplinary emergency response professionals and coordination/support personnel with a communication background.

Communications Unit Leader Training Course (COM-L) is an All-Hazards Type III Communications Unit Leader (COM-L) training course and is intended to train emergency responders on how to serve as radio communications unit leaders during all-hazards emergency operations. This training will significantly improve communications across the multiple disciplines and jurisdictions responding to an incident. This COML training will qualify emergency responders as lead radio communications coordinators if they possess the necessary prerequisites, including knowledge of local communications; communications systems; and local, regional, and state communications plans. COML responsibilities include developing plans for the effective use of incident communications equipment and facilities, managing the distribution of communications equipment to incident personnel, and coordinating the installation and testing of communications equipment.

The newly revamped NIMS compliant curriculum now includes four days of classroom work and exercises and is designed to prepare communications emergency responders to plan for and operate in a regional response.

Course requirements require a back ground in public safety communications and include the following NIMS Courses: ICS 100, ICS 200, ICS 700, ICS 800 and ICS 300. All but ICS 300 are available on line from FEMA. ICS 300 is available as a 3 day class room course during the year.

Questions concerning the training should be directed to Kentucky Division of Emergency Management, Communications Supervisor, Bob Stephens, at 502-607-1617.

Communications Exercises

This year marked an extremely successful year for testing the restoration of portions of the state's RF networks.

While it simply is not possible to have a full backup of all systems, it nonetheless was proven during the National Level Earthquake Exercise in May 2011 that a small but significant and critical portion of the network could easily be replaced by an airborne repeater and emergency assets on the ground.

Annual Report on Public Safety

The After Action Report

A joint after action report was submitted by the Army National Guard and Emergency Management Agency on the success of this exercise. This report is available upon request.

Primary Wireless Communications – Review of Project Plans

❖ *KRS 42.738 (2) – The Kentucky Wireless Interoperability Executive Committee shall serve as the advisory body for all wireless communications strategies presented by agencies of the Commonwealth and local governments. All state agencies in the Commonwealth shall present all project plans for primary wireless public safety voice or data communications systems for review and recommendation by the committee and the committee shall forward the plans to the chief information officer for final approval. Local government entities shall present project plans for primary wireless public safety voice or data communications systems for review and recommendation by the Kentucky Wireless Interoperability Executive Committee.*

State Level Project Assessments

❖ *KRS 42.738 (4) - The executive director shall examine the project plans for primary wireless public safety voice or data communications systems of state agencies as required by subsection (2) of this section, and shall determine whether they meet the required architecture and standards for primary wireless public safety voice or data communications system.*

The state agency project assessment process has not changed since it was instituted. This process continues to require a complete project plan be submitted to the KWIEC for review. Since the typically high cost and overall importance of these statewide projects is vital to setting the long term direction of the state, taking a wrong turn at the state level could potentially cause problems for years. For this reason, state level wireless projects will continue to go through the entire review process and must still be approved in writing.

The state level assessment process continues to follow the flowcharted process shown in the figure below.
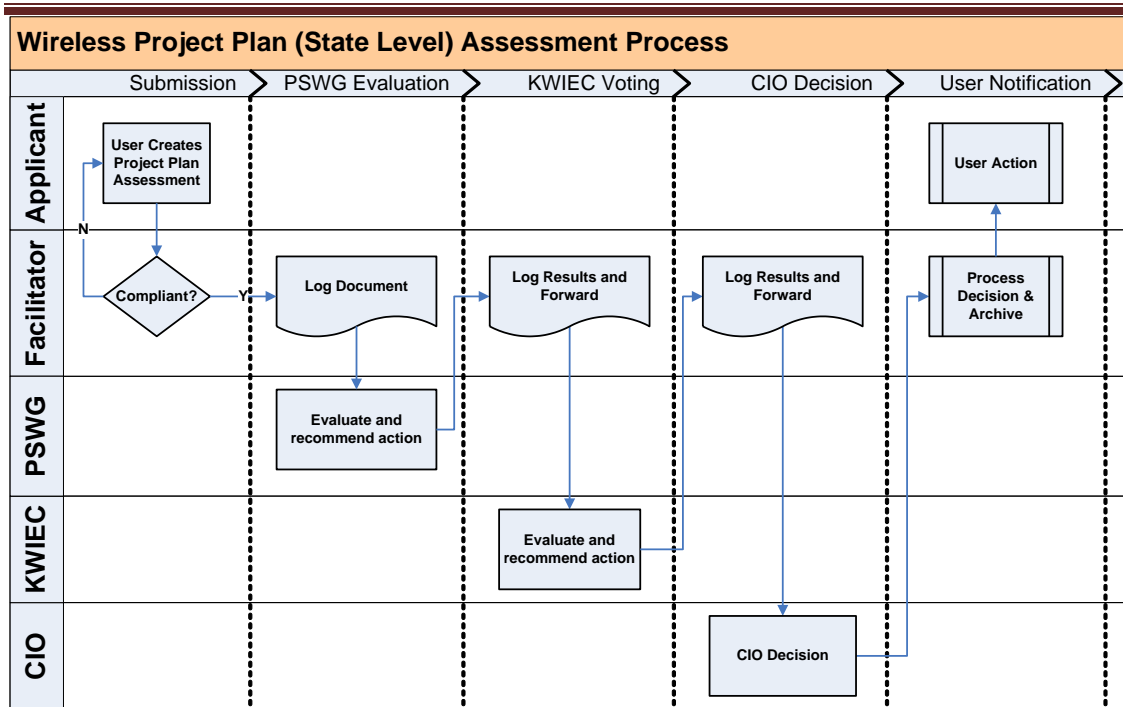
Figure 5 – State Level Assessment Process

State Agency Project Assessment Form

This form has not changed much since its inception in 2004 and minor update in 2006. The form is modeled after a business case analysis and requires state agencies to justify and fully explain their projects before they will be reviewed and approved. It has been used successfully over the years, and as such this form is not expected to change significantly.

Annual Report on Public Safety

Local Level Project Assessments

The review process which was streamlined in 2009 continues to be updated and used for review of local agency assessments. As before, the KWIEC has tasked the Facilitator and the PSWG to process these types of projects at their level. Any project on the list below is pre-approved and is handled entirely by the Facilitator. The Facilitator will send back a signed form to the local agencies and copy any granting agencies on the approval.   The KWIEC Facilitator checks each project submitted for review against this pre-approved list.

- ➢ Non-primary wireless systems
- ➢ Simple augmentations to an existing and approved network
- ➢ Mobile Data projects
- ➢ Analog Voice upgrades
- ➢ P-25 Digital Voice upgrades

The flowchart used in 2010 to review and assess local agency projects for compliance with OEC and KWIEC guidance was updated in 2011. The one recurring complaint received by the local agencies concerning the 2010 flowchart was that it was too complicated.
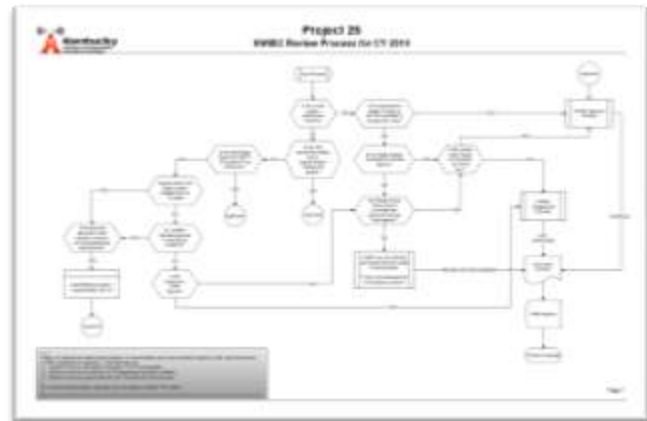
This year the OEC indicated that the federal grant money that they provide must be used to comply with P-25 or at the very least explain in a justification letter how they will move from noncompliant systems to full P-25 compliance. This simplified the flowchart and decision making process for the KWIEC.   The Public Safety Working Group used the 2011 guidance and the KWIEC's requirements to revise and simplify the flowchart to this format.
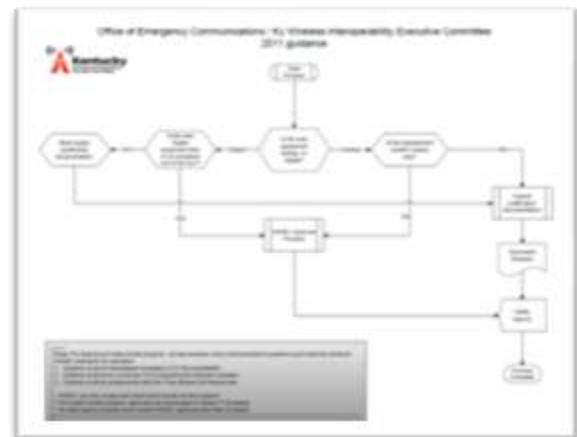
This flowchart can be downloaded from the KWIEC website at www.kwiec.ky.gov.

Annual Report on Public Safety

Local Agency Project Assessment Form

Once again this form has been revised to keep up with the changing federal and state guidance and requirements.   Since its inception and approval in 2009, it has saved countless man-hours for both the submitting agency and the reviewing body. As before, this form will continue to be adjusted annually or as required to best serve the local agencies in their efforts to meet KRS requirements.

For 2011 the local agency assessment form was revised as shown below. Now an agency simply needs to send in the form and provided the information is accurate, a decision can be made and the form signed and returned in a matter of a week or so.

Figure 6 – Local Agency Project Summary Form 2011

Project Reviews of Grant Submissions

For the third year in a row, the Public Safety Working Group met to conduct a review of over 100 project grant requests submitted to the Kentucky Office of Homeland Security (KOHS) for federal funding. The State Wireless Interoperability Coordinator led the group and directed that the KWIEC guidance and the Office of Emergency Communications grant guidance would be the criteria used to evaluate the requests.

Over 80% of the projects were compliant with OEC's guidance which in itself is promising. This shows that most agencies understand the need for interoperability standards. For those few that are noncompliant, they are required to submit justification as to why they cannot meet the OEC guidance. For those that do not submit a justification for noncompliance or for those that do not present a reasonable case for noncompliance, their project will not be endorsed by the KWIEC.

As occurred last year, the State Wireless Interoperability Coordinator and the Chairperson of the KWIEC jointly signed a letter recommending that funding be prioritized toward the FCC Mandates including Narrowbanding and the P-25 initiative.

It must once again be stated that the KWIEC's control over local agencies is limited to review and recommendations only. Unfortunately, some key agencies have chosen to ignore the recommendations provided by the KWIEC and purchase proprietary equipment. While some limited degree of interoperability can occur using the state's analog interoperability channels, any event which occurs that is classified as medium scale or above would quickly overwhelm the capabilities of these few channels. In effect, these standalone agencies have put an end to easy interoperability with state and regional agencies.

Annual Report on Public Safety

Funding and Support of the public safety shared infrastructure

❖ *KRS 42.738 (3) - The committee shall develop funding and support plans that provide for the maintenance of and technological upgrades to the public safety shared infrastructure, and shall make recommendations to the executive director, the Governor's Office for Policy and Management, and the General Assembly.*

As reported earlier in this document, the Funding Initiatives Workgroup was created in June 2009 to address this issue going forward.

The public safety shared infrastructure known as the Kentucky Emergency Warning System (KEWS) is currently undergoing a $45 Million upgrade which is expected to be complete in 2012. The new system currently has traffic on over 80 sites and while behind its initial schedule, is progressing.

The system has new and upgraded power and grounding systems and improved shelters and compounds. When complete, it will be an IP based self-healing network capable of carrying bandwidth on demand of up to 155Mbps.

Long term support, maintenance, and upgrades of this network will be covered by fees charged to customers using the system.
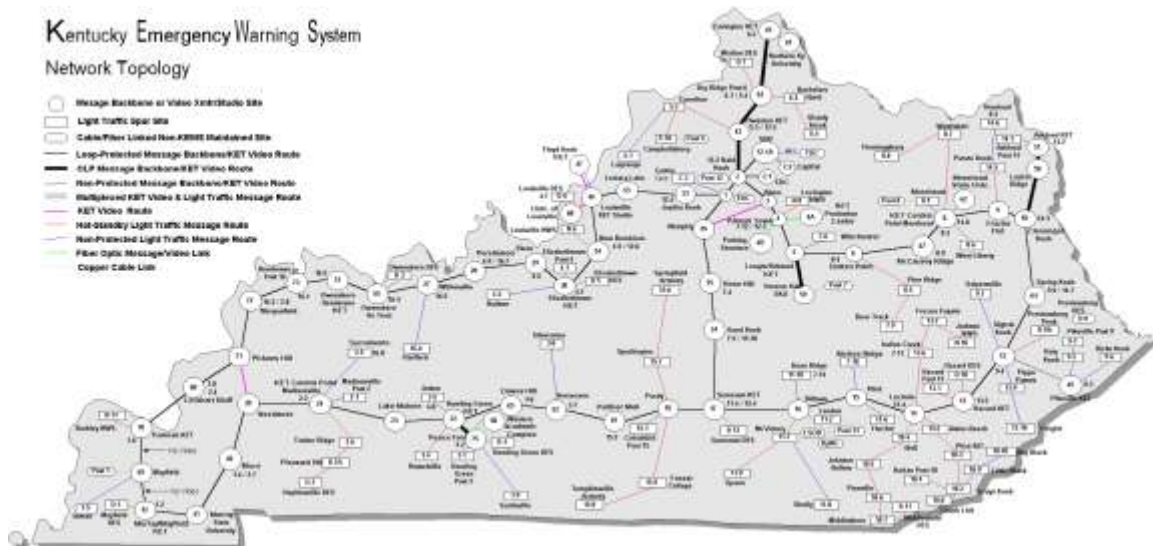
Figure 7 – KEWS Network

Complete KEWS Upgrade

Kentucky' digital microwave communications upgrade to the KEWS network is expected to be complete by this time next year. All the old analog systems have been replaced with a new digital IP based infrastructure capable of carrying 155 Mbps through each of the six loops in the network. Traffic has been fully cutover to the new system in the eastern half of the state and the remaining circuits in the West should be cut by the end of 2011.

The overall KEWS system has been significantly upgraded in more than just the transport portion of the network. Towers have been strengthened, waveguides and dishes replaced, and grounding and battery backup systems upgraded. Emergency backup generators have been put in place all along the backbone and many shelters have been replaced to increase security and available space.
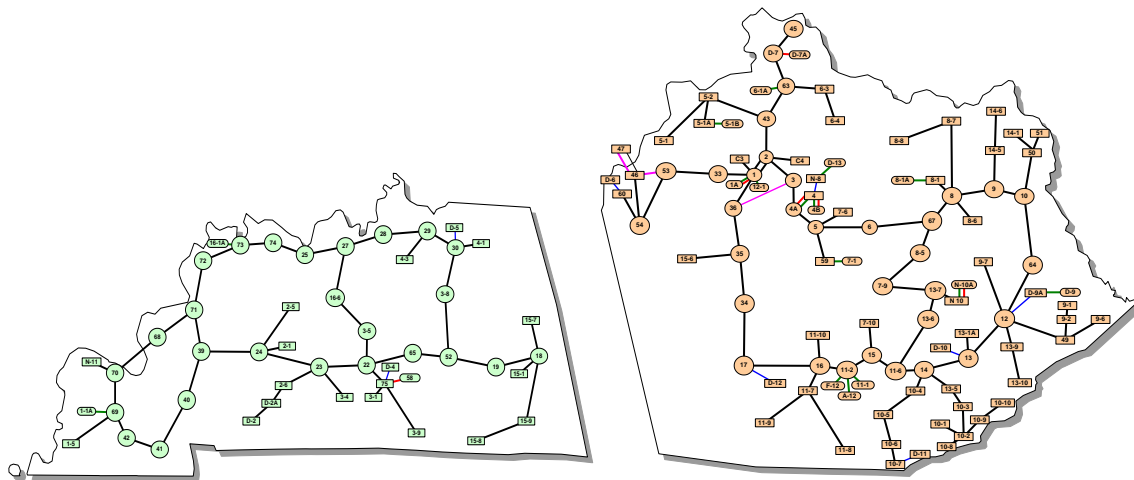
Figure 8 – KEWS East/West Network

The system has been designed from the ground up to allow for remote administration, provisioning, and monitoring. A web based interface allows for the remote monitoring and troubleshooting of any site and this ability is built into the NetBoss monitoring software.

These screenshots show the overall status of the network and equipment within a specific site. A mouse click on any site or piece of equipment drills down to the lower level site level and displays equipment on the site.

This screenshot shows the errors reported on the network which can be filtered as desired by the operator.
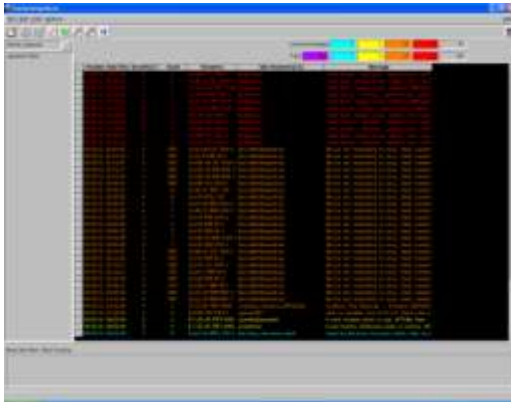
Voice Interoperability: Voice Mutual Aid

Public Safety Agencies across the Commonwealth primarily operate in one or more of three public safety frequency bands; 150 MHz , 450 MHz , and 800 MHz. There are several of these mutual aid channels available across the state with more being installed under a current augmentation project.

These are the voice mutual aid channels available to all public safety agencies in the state. They need only agree to a Memorandum of Understanding with the Kentucky State Police and then program their radios with the applicable NIFOG channels.

VHF (150 MHz)			
ID	Direct	PL Tone	Use
VMA	155.4750 MHz	156.7	Call Channel
VCALL10	155.7525 MHz	156.7	
VTAC 11	151.1375 MHz	156.7	
VTAC 12	154.4525 MHz	156.7	
VTAC 13	158.7375 MHz	156.7	
VTAC 14	159.4725 MHz	156.7	

Figure 9 – VHF Mutual Aid Channels

| UHF (450 MHz)				
ID	Transmit	Receive/Direct	PL Tone	Use
UMA	458.300 MHz	453.300 MHz	162.2	Call Channel
UCALL40	458.2125 MHz	453.2125 MHz	156.7	Call Channel
UTAC41	458.4625 MHz	453.4625 MHz	156.7	
UTAC42	458.7125 MHz	453.7125 MHz	156.7	
UTAC43	458.8625 MHz	453.8625 MHz	156.7	

Figure 10 – UHF Mutual Aid Channels

UHF (800 MHz)				
ID	Transmit	Receive/Direct	PL Tone	Use
8CALL90	806.0125 MHz	851.0125 MHz	156.7	Primary Call Channel
8TAC 91	806.5125 MHz	851.5125 MHz	156.7	Police
8TAC 92	807.0125 MHz	852.0125 MHz	156.7	Fire
8TAC 93	807.5125 MHz	852.5125 MHz	156.7	EMS
8TAC 94	808.0125 MHz	852.5125 MHz	156.7	Command & Control

Figure 11 – 800 MHz Mutual Aid Channels

With the stovepipe systems continuing to be installed by some local public safety agencies, the only means of interoperability for these agencies is to use the few Mutual Aid channels available within their spectrum or to carry multiple radios.

Annual Report on Public Safety

Fortunately the Commonwealth is in the process of expanding its Mutual Aid infrastructure by adding UHF national Interoperability Repeater Channels (453/458.2125 UCALL40, 453/458.4625 UTAC41, 453/458.7125 UTAC42, 453/458.8625, UTAC43) and then interfacing them with the 16 regional Kentucky State Police Posts as shown below.

When combined with the state police's ability of cross connecting channels across multiple bands, this will provide users with additional capabilities typically not available on stock radios.
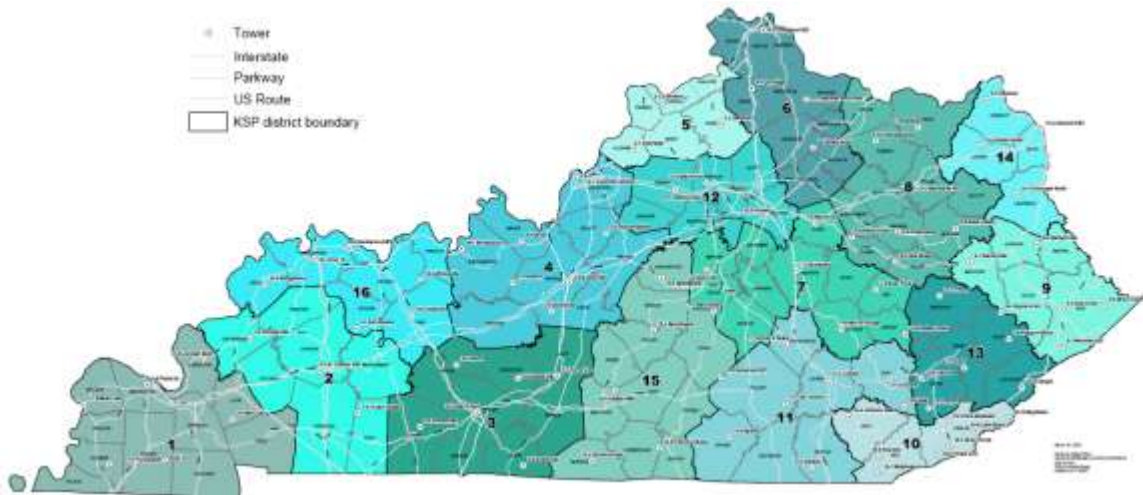
Figure 12 – Voice Mutual Aid/KSP Regions

The following schedule shows the current progress of this update. Sites in GREEN denotes that site work installation is complete and these channels are available in local repeat only, that is, the signal is not sent back to the KSP post for regional use. Sites in YELLOW and ORANGE are under construction. WHITE denotes that the work is scheduled, but not underway. All work is scheduled to be complete by October 1, 2011.

The interface hardware has been purchased and installed at the 16 regional Kentucky State Police Posts, however the circuits still need to be ordered and installed. This is expected to be complete once the KEWS network is fully accepted by the end of the year.

Phase 2 Sites	
Dicks Knob	2.1
Duty Knob	2.1
Grays Knob	2.1
Pine Mountain	2.1
Salyersville	2.1
Signal Knob	2.1
Spring Knob	2.1
Asher Beech	2.2
Big Black	2.2
Bright	2.2
Chuck Lick	2.2
Frozen Fugate	2.2
Little Black	2.2
Pippa Passes	2.2
Bear Track	2.3
Hector	2.3
London	2.3
McKee Ridge	2.3
Pine Ridge	2.3
Springfield	2.3

Phase 4 Sites	
Silvermine	4.1
Dawes Hill	4.1
Horse Cave	4.1
Scottsville	4.1
Tompkinsville	4.1
Sacramento	4.2
Jetson	4.2
Russellville	4.2
Whitesville	4.2
Hartford	4.2
LaGrange	4.3
Carrolton	4.3
Dry Ridge	4.3
Bachelors Rest	4.3
Shady Nook	4.3
Hudson	4.4
Ekron	4.4
New Bernhiem	4.4
WKPC Bishops Lane	4.4
Persimmon	4.4

Phase 3 Sites	
Clevenger Knob	3.1
Flemingsburg	3.1
Johnson Hollow	3.1
Potato Knob	3.1
Shelly	3.1
Washman	3.1
Bell	3.2
Doans Ridge	3.2
Forrest Cottage	3.2
Middlesboro	3.2
Mt. Victory	3.2
Pineville	3.2
Rotten Point	3.2
Indian Creek	3.3
Keltner Mell	3.3
Rose Hill	3.3
Sand Knob	3.3
Spann	3.3
Spurlington	3.3

Phase 5 Sites	
Pickens Hill	5.1
Lockhart Bluff	5.1
Inman	5.1
Mont LBL	5.1
Tucker Ridge	5.1
Bon Harbor	5.1
Morganfield	5.2

KET Sites	
1-2 Mayfield	5.2
1-6 Paducah	5.2
2-2 Madisonville	5.2
4-2 Elizabethtown	5.2
3-3 Bowling Green	5.2
5-3 Owenton	5.3
6-2 Covington	5.3
8-2 Morehead	5.3
9-3 Pikeville	5.3
11-4 Somerset	5.3
14-2 Ashland	5.3

Completed

Table 5 – Voice Mutual Aid Site Upgrades

Data Interoperability: KyWINS and KyWINS Messenger

Kentucky continues to use the Kentucky Wireless Information Network Service (KyWINS) as the primary wireless data infrastructure for first responders however this trend is changing.   The IPMobileNet 800 MHz network used to deploy this system has several shortcomings including very low speed data of 19.2 Kbs, and saturation in medium size and above areas. Many agencies are switching to air cards which allow them speedier access. Unfortunately, public safety agencies using air cards are not priority users, and during emergencies when the cell network is saturated, there is simply no way to get access.

KYWINS Messenger software is still in use where bandwidth is not at a premium and is expected to rapidly expand in usage once the broadband wireless network is deployed. Since KyWINS and KyWINS Messenger are free to all agencies, the only downside to its use is its bandwidth requirements.

It is hoped that the federal wireless broadband initiative will gain steam and be approved this year. A hybrid system using a broadband network in metro areas and the low speed data system in low usage rural areas seems to be exactly what Kentucky needs to meet the wireless data demands.

KWIEC GOALS

Typically the KWIEC adopts goals to work toward each year where KWIEC members, the Public Safety Working Group, or the KWIEC Facilitator are tasked to monitor, evaluate, or complete them. Along with the KWIEC mandates, progress toward these goals is briefed at each quarterly meeting. Of course not all goals are fully met each year, but as with all goals, working toward completing them is beneficial.

Goals remaining from 2009

GOAL 3 - Complete the upgrade of the KEWS Eastern Segment

➢ This goal is nearing completion. All traffic has been cut over onto the new system in the east and upon successful completion of the performance evaluation, the system will be accepted.

➢ While this goal keyed on the east, traffic is expected to be cutover in the west by the end of the year as well. Complete project closeout is expected to occur in late 2012.

Goals remaining from 2010

GOAL 2 – Encourage/push for a public safety broadband data pilot project

➢ The KWIEC put this goal on hold since there are simply too many unresolved issues and questions surrounding the proposed national broadband data network. The KWIEC initially intended to host a vendor conference to evaluate potential broadband data solutions, but this was delayed to allow time to research what other states find in their pilots.

GOAL 4 – Establish trained regional interoperability groups

➢ The State Wireless Interoperability Coordinator briefed the KWIEC on this goal and stated that there were no funds available to pursue this effort. This goal has been placed on hold until a low or no cost solution can be found.

Goals for 2011

The KWIEC chose not to adopt any new goals for 2011 since the completion of the previous goals needed to be a priority.

Legislative Issues concerning Communications Interoperability

This section summarizes issues which should be brought to the attention of the legislature and its committees responsible for public safety. It is hoped that this section will garner attention and bring about points of discussion from these key bodies.

In this, the tenth year since the attack on the World Trade Centers and the disastrous results from the lack of critically needed interoperable communications, the country, and the Commonwealth of Kentucky are still struggling to achieve interoperability.

While Kentucky is certainly better off now than we were ten years ago, the question remains - Why are we not fully interoperable yet, or at least nearing completion in porting our communications systems to fully digital interoperable P-25 systems?

While the answers may seem subjective, it is nonetheless important to identify what this body feels are major factors delaying full communications interoperability across Kentucky. These issues have not changed significantly since last year and are identified below.

Lack of Funding for Equipment

This issue is quite obvious. New equipment is required, in almost all cases, to meet both the federal Narrowbanding mandate and the P-25 interoperability efforts. Neither state

nor local agencies have the funding to replace or update their equipment without substantial funding.

An estimate was requested by the KWIEC for the cost of establishing a fully interoperable statewide system.   Without a bottom-up estimate it was impossible to accurately determine the cost however a Rough Order of Magnitude was presented to the KWIEC at $92 Million. This does not account for replacement of handheld and mobile systems.

Lack of Funding for the State Wireless Interoperability Coordinator's (SWIC) responsibilities and initiatives

The Public Safety Working Group is a group of highly professional volunteers holding extremely specialized skill sets. Each of these members has a full time job with the state and still volunteer their time to assist in achieving public safety communications interoperability.

If the SWIC were staffed to properly handle all his responsibilities, he would need at least three and realistically five professionals to accomplish these tasks. Funding which normally would be provided to the SWIC by the federal government to meet their mandates has been used to staff other critical programs. Unfortunately, even these funds have now evaporated.

Limited KWIEC authority at the Local level

As was stated last year, the KWIEC will require the authority at all levels to properly lead the state's wireless interoperability initiatives.

Making a committee responsible for statewide interoperability efforts without giving them the authority to require all agencies to adhere to these standards is the definition of folly.

The problem with asking local agencies to follow non-regulatory guidance was illustrated this year when a major local agency requested funds to build a proprietary wireless digital voice system complete with a microwave backhaul infrastructure. This project was reviewed and recommended for partial approval by the KWIEC allowing only the

KRS 42.738 Section 2 (excerpt) reads as follows:

"Local government entities shall present project plans for primary wireless public safety voice or data communications systems for review and recommendation by the Kentucky Wireless Interoperability Executive Committee."

infrastructure portion of the project to be approved for the use of Federal funds. This agency decided to build the infrastructure using federal funds and use their local funds to build a stovepipe system which is not interoperable with local, state, or regional agencies.

Without statutory authority for disapproval of any proprietary digital system projects which local agencies wish to undertake, the KWIEC effectively is helpless to stop agencies from failing the citizens of Kentucky. The KWIEC must educate our agencies to take the larger interoperability concerns into account. Obviously, an environment where every agency does what's best for them without regard to the larger picture is not in the best interest of the citizens of this state.

Lack of Trained Regional Interoperability Groups

A lack of trained regional interoperability groups continues to hamper the state's efforts to meet our interoperability goals and requirements. One of the biggest problems we have had, and continue to have, is the absence of regional points of contact. These positions could disseminate information, provide training, and speak for the area at KWIEC meetings. While this would be beneficial, we simply do not have the resources to create and train these contacts.

Despite the numerous advantages of having these trained regional interoperability groups, we must have funding to get subject matter experts out in the field to train these groups. Creating groups without properly training them would cause more frustration and confusion than not having any groups at all.

The SWIC has decided that until funding is made available to train these groups with the proper subject matter experts, it is yet another good idea that must be put on hold. The benefit to local agencies is significant and the advantage of agencies having a direct channel to the KWIEC provides substantial value, but it is not possible at this point.

Conclusion

Kentucky continues to move in the right direction with its interoperability efforts and upgrade projects. The upgrades to the KEWS network alone ensured that systems were operational during the flooding that occurred this summer. The photo of this site shows the extent of flooding and yet the systems at this site remained operational.

As to local agencies submitting projects for review, more agencies this year have applied for the approved digital P-25 or purely analog standard than in previous years. This is very promising, and it is hoped that this trend will continue.

For those agencies that continue to pursue their own communications agenda despite the OEC and the KWIEC's guidance, their capabilities are likely to be diminished in a major event. If a major disaster requires regional, state, and federal resources where the local agencies can't communicate because they didn't comply with this guidance, the repercussions will be severe. While the Mutual Aid channels are effective for smaller incidents, they can only support a handful of agencies and will not perform adequately in a large incident.

As stated before, the KWIEC believes that a dedicated public safety infrastructure for both voice and data, following the open standards of P-25, will benefit not only the first responders, but all citizens of the commonwealth. The long-term benefits of dedicated and standardized public safety platforms will far outweigh the short term cost differential.

This document will be available for download as a PDF file from the KWIEC website located at www.kwiec.ky.gov. For additional information, questions, or comments concerning this document please contact the KWIEC Chairperson Jim.Barnhart@ky.gov or the KWIEC Facilitator CharlesR.Miller@ky.gov via email.